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Government of Northern Rhodesia.

MEDICAL REPORT

ON

Health and Sanitary Conditions for the Year 1938.

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NORTHERN RHODESIA

Medical Report on Health and Sanitary Conditions for the year, 1938.

SECTION I.

ADMINISTRATION.

(a) Staff.

EUROPEAN :

The authorised establishment is given in Table I at the end of this report. The chief changes during the year were as follows :

Appointments :

Deputy Director of Medical Services :

Dr. J. M. Campbell, M.B., CH.B. (Edin.), D.P.H. (Camb.), D.T.M. (L'pool).

Medical Officers :

Dr. E. A. Beet, M.R.C.S. (Eng.), L.R.C.P., D.T.M. and H. (Lond.), on 22nd April, 1938.

Dr. J. W. O. Will, M.B., CH.B. (Edin.), on 22nd July, 1938.

Dr. E. A. Keith, M.B., CH.B., (St. And.), on 9th August, 1938.

Dr. I. L. Briggs, M.B., CH.B. (Edin.), on 9th December, 1938.

Nursing Sisters :

Miss A. P. Robinson.

Miss N. M. Featherstone.

Miss N. D. B. Notman.

Miss E. G. Beveridge.

Miss H. E. Arnold.

Miss S. Wentworth.

Miss S. W. Mackenzie.

Miss A. M. W. Johnson.

Miss M. B. Cahill.

Miss A. M. Griffith Green.

Miss G. M. Ross.

Miss F. M. Nuttall.

Departures :

Medical Officer :

Dr. G. M. C. Powell (transferred to Tanganyika on promotion).

Nursing Sisters :

Miss K. E. Butler (resigned).

Mrs. S. P. Goldman (resigned).

Miss M. C. Adams (resigned).

Miss M. A. J. Poulson (resigned).

Miss A. I. M. Thomas (resigned).

Financial conditions permitted increase of the establishment of Medical Officers by two and of Nursing Sisters by five, three of these being for the institution of new welfare clinics.

NATIVE :

The establishment of trained native medical orderlies was increased by 24 to provide for new rural dispensaries. These were not all appointed, not being required. The training of native staff is dealt with at page 12.

(b) Ordinances and Regulations affecting the Public Health enacted during 1938 :

Public Health (Amendment) Ordinance, 1938 (No. 38).

Notification of Births of the Children of Africans Ordinance, 1938 (No. 43).

Dangerous Drugs (Amendment) Regulations, 1938.

Public Health (Tea Rooms, Restaurant, Boarding Houses and Hotels)
Regulations applied to the following Townships :

Broken Hill.
Choma.
Kafue.
Luanshya.
Mazabuka.
Mufulira.

Public Health (Drainage and Latrine) Regulations applied to Mufulira Township.

(c) **Finance.**

Total Revenue of Protectorate	£1,593,504
Total Expenditure of Protectorate	1,417,776
Health Vote Revenue :	
Hospital Fees	£6,809
Medical Subsidies	200
Sale of drugs and dressings	430
Health Vote Expenditure	£73,109
Health Vote Expenditure = 4.65 per cent. of Revenue of Protectorate.	
Health Vote Expenditure = 5.16 per cent. of Expenditure of Protectorate.	

SECTION II.

PUBLIC HEALTH.

(1) **General Remarks.**

Reliable statistics of population, births and deaths are not available. The European population is guessed at 13,155, the African population at 1,377,959. The uncertainty as to even approximate accuracy of the population figures makes it unprofitable to calculate rates for births or deaths, but registration of births and deaths of Europeans makes it possible to say that there was a European infant mortality of 28.17 per 1,000 births. The uncalculable corresponding figure for Africans must be much higher.

The lack of reliable population figures is a matter for regret. Without vital statistics it is difficult to frame and impossible to assess a public health policy. Further, to so great an extent does Northern Rhodesia's prosperity depend upon African labour and to so great an extent is the Protectorate's labour being sought by neighbouring countries, that it seems to me to be of the highest importance that we should know, beyond any doubt, whether the African population is increasing, stationary or decreasing.

Information reaching my department during the year indicates no heavy, or unusual mortality or morbidity. There were two small outbreaks of small-pox (variola major), both in Barotseland, totalling 34 cases with four deaths. It was clearly established that the disease was introduced from nearby Portuguese territory by a Northern Rhodesia native who visited an infected village.

The morbidity and mortality of the Protectorate in 1938 as exhibited by the in-patient work of the hospitals and as compared with recent years appears in the following table :

All Government Hospitals : Total In-Patients.

Year	Europeans		Natives	
	Patients	Deaths	Patients	Deaths
1933 ...	1,349	30	8,376	325
1934 ...	1,483	25	9,078	398
1935 ...	1,666	28	10,643	397
1936 ...	1,691	23	10,700	403
1937 ...	1,731	42	11,922	415
1938 ...	2,055	37	12,271	448

The hospital mortality rate for 1938 for Europeans is about 18 per 1,000 admissions, and for Africans about 36 per 1,000, the higher figure for natives reflecting, I believe, both their lesser resistance to disease and the late stage in sickness at which aid is sought.

It is to be noted that half or more of the European population resides in the Copperbelt, in the three Mine Townships (Roan Antelope, Nkana, Mufulira), in the adjoining public townships (Luanshya, Kitwe, Mufulira) and around the rapidly developing new copper mine at Nchanga. These receive medical care from the medical staff of the mining companies and in the hospitals of those companies and are not included in the above tables from Government European hospitals. An endeavour will be made to include in the 1939 report data from the mine hospitals.

(2) General Diseases.

A survey of reports from twelve medical districts suggests the following remarks.

Syphilis continues to be reported as wide-spread in certain areas. The parts of the country supposed to show the heaviest incidence are the Baila country round Namwala and Barotseland. There is no Medical Officer stationed in the Baila country and accurate information is lacking, although there is little doubt as to the prevalence of syphilis there or as to its serious effect on the birth rate. The Medical Officer, Mongu (Barotseland), reports that in 1936, 1937 and 1938 he treated syphilis cases as follows :

			1936	1937	1938
In-patients	...	...	166	225	283
Out-patients	...	...	3,331	2,694	2,716

Both for in-patients and for out-patients, syphilis cases at Mongu were over 33 per cent. of all cases treated. The Medical Officer, Balovale (Barotseland), reports that syphilis is a major problem of the district. In 1938 he treated 497 primary cases, 69 secondary, 160 tertiary and 15 congenital. He comments on the frequency with which primary sores are seen in young married and unmarried girls.

Syphilis appears to be comparatively uncommon in the Northern Province. Two of the three Medical Officers stationed there make no special comment on it and the third (Abercorn) remarks that venereal disease is not common.

Two interesting notes concerning venereal disease appear in the Barotseland reports. The Medical Officer at Mongu speaks of difficulty in treating certain complications of venereal disease which require slitting of the prepuce. Apparently the Lozi people much prefer bearing present pain to having the pain relieved at the cost of subsequent risk of being mistaken for the despised Mawiko who practise circumcision. *Per contra*, the Medical Officer, Fort Rosebery, reports that phimosis is common, and circumcision the one popular operation.

The Medical Officer at Balovale has encountered urethral stricture in gonorrhoea cases apparently due to instillation into the urethra of the juice of the plant *Gloriosa superba* L. by means of a hollow reed, this being a native method of treatment. It may be remembered that in previous reports the rarity of stricture as a sequela to gonorrhoea in natives has been commented upon, a Medical Officer previously stationed at Balovale having suggested that the comparative frequency of stricture in Europeans in Europe was perhaps due to over-active treatment.

Yaws continues to be focal in incidence but it seems certain that the very numerous and very advanced cases once met with in the Solwezi-Kasempa area are no longer encountered. The Medical Officer, Fort Rosebery, reports that it is common along the Luera and Luapula rivers.

Conjunctivitis is again specially referred to in reports from four districts. It is especially associated with the dry, dusty season and with flies, and severe complications with partial or even complete blindness are not uncommon.

Scabies continues to be very prevalent and not infrequently secondary infection renders the itch a disabling condition. During the year "itch campaigns" were started in several districts. In these the Native Authority employs a partially trained itinerant orderly and buys lime and sulphur which are boiled up to make itch paint at villages in succession. Leaflets of instructions have been printed in the four principal languages, including instructions as to preliminary bathing and as to disinfection of clothing. An indigenous loofah has proved useful in the preliminary bathing. The campaigns are popular and where supervised by a district officer have had at least a measure of success. They are being used as a first step towards the provision by Native Authorities of medical facilities for their people, and the Native Development Board has set aside money in order to supplement for this purpose the funds of impecunious authorities.

Influenza was not prevalent, Broken Hill was the only district whose Medical Officer reported an epidemic. The epidemic lasted five months and many employees

of the Broken Hill Mine were affected, prolongation of the epidemic being due, perhaps, to the considerable influx of additional labour. There were 196 admissions of natives to hospital for influenza with 4 deaths in all. Twelve cases developed pneumonia which caused two of the deaths. The 1937 epidemic at Broken Hill caused 32 cases of pneumonia with 10 deaths.

Lobar pneumonia continues to be troublesome as a disease of native labour, particularly on mines. At Broken Hill in 1938 there were 80 cases with 12 deaths. The Medical Officer attributes lessened mortality to use of drugs of the sulphonamide group, but M. and B. 693 did not become available until after the end of the year under review.

There is still uncertainty regarding the true incidence of amoebic infection but the Medical Officer, Balovale, who in 1937 reported it to be common there, has confirmed it during 1938. He records 22 cases and found cysts in the stools of 3 cooks in European households and in the stools of 5 applicants for employment as kitchen boy.

I reported last year that I felt some uneasiness about tuberculosis in Northern Rhodesia natives. Reports by Medical Officers for 1938 have not removed it. From Balovale are reported 23 cases of which 17 were pulmonary and two were tuberculosis of the vertebral column. Mongu reports 3 pulmonary cases and 3 of adenitis. Ndola notifications numbered 11. Fort Jameson reports 9 cases of whom 6 were pulmonary (3 deaths). Five of these pulmonary cases had been repatriated from Southern Rhodesia. Abercorn and Mazabuka each report two pulmonary cases. Total notifications were Europeans, 7 (6 pulmonary); Africans, 234 (197 pulmonary), or 241 in all. In the previous six years notifications of tuberculosis (all forms) were as follows:

1932	1933	1934	1935	1936	1937
15	45	63	84	93	71

The experience of other African territories indicate, of course, that one must expect a steady and probably rapid tuberculisation of the native population, but the sudden increase shown by the 1938 figure for notifications demanded special enquiry. It could not be accounted for either as the expected steady increase or as an indication of greater native readiness to seek European medical aid. Enquiry showed that 124 of the total notifications came from Mufulira and that all rested on diagnosis by the microscope. Early in the year the Chief Medical Officer of Mufulira Copper Mines Ltd. had drawn my attention to a sharp increase in notifications from that mine, and he at once began a special study of the position. When the total figures for the year became available I visited Mufulira where I was given every facility for investigation. I discussed with the Chief Medical Officer, the Mine Manager and the Compound Manager all case records and X-ray photographs and questions of housing, overcrowding and the like. There appeared to be a local epidemic of pulmonary tuberculosis, since careful search and examination at the other mines revealed no such frequency of the disease, and certain circumstances at Mufulira pointed to the possibility of a local epidemic there. There had been two periods since 1935 when considerable overcrowding in native employees' quarters occurred—two periods when the needs of the industry called for increase of the labour force faster than adequate housing could be provided and there was also a period when overcrowding by visitors (always difficult to prevent) was less strictly controlled than now. These two periods of rapidly expanding labour force coincided with the opening of the mine after it had been closed down and with the increase of production when the copper quota was expanded. Plotting of the notified cases by huts on a plan of the compound did not fully support the hypothesis of a local epidemic due to overcrowding and neither the Chief Medical Officer of the mine nor myself was satisfied that a full explanation of events had been found, and further study was demanded by the fact that the tubercle bacillus was reported to have been found microscopically in the sputum of strong, well nourished, afebrile employees admitted to hospital for slight bronchial catarrh. Investigations are not yet complete but it appears that a non-pathogenic bacillus, both acid-fast and alcohol-fast has been mistaken, in some cases at least, for the morphologically identical *Mycobacterium tuberculosis*. Such an organism has been reported, in the same connection, from workers in the Rand mines, and is present in certain tap waters. A full report will be available later. Be the final result of this investigation what it may, present evidence is enough, I believe, to justify the view that tuberculosis is increasing. Many X-ray photographs from Mufulira show unmistakeable signs of

it in the lungs, though I saw no evidence of silicosis in any. If the error suggested above is established, then the notification figures for 1938 must be ignored.

Rheumatic affections, previously reported from Mongu, and from there only, to be a common cause of moderate disability, are again referred to in the report from that station, where 371 such cases were met with. In previous reports the Medical Officer had found occasion to suggest association of this group of troubles (fibrositis, lumbago, sciatica, myalgia, etc.), with dental sepsis and, pursuing this idea, he reports some success in 1938 from treatment by streptocide. In his 1938 report, the Medical Officer, Fort Rosebery, also alludes to the frequency of this group associated, as at Mongu, with the wet season, but he suggests that the cause may be infestation by parasitic worms and claims some success by treatment with anthelminthics.

Reference has been made in previous reports to numerous cases of extensive burning from falling into the fire during a "fit" and possible causes of these temporary losses of consciousness have been suggested tentatively. Once again Mongu reports the largest number (56) of these cases but the Medical Officer, Fort Rosebery, puts forward a new suggestion as to the cause. He has noticed that such cases occur, in his district, among children about the age of puberty, which would seem to rule out the smoking of either "dagga" or crude native tobacco as the cause of loss of consciousness. He suggests heavy worm infestation may be the cause and calls attention to Manson's observation of the liability to syncope in such infestations.

For the second year in succession the Medical Officer, Balovale, reports three cases of acute anterior poliomyelitis and for 1938, one case of encephalitis lethargica.

(3) Communicable Diseases.

MOSQUITO AND INSECT-BORNE DISEASE.

Among Europeans malaria continues to be the chief source of invaliding and, together with blackwater, the commonest cause of death. All three types of malaria parasite are met with, the sub-tertian being by far the commonest and the quartan parasite rare. The important vectors are *A. funestus* and *A. gambiae*. In 1938 there were in Government European hospitals 23 blackwater cases with five deaths. This is the highest number of blackwater cases for many years but the case mortality is not high. The number of malaria cases admitted to hospital was also the highest for many years, all stations showing a rise except Ndola and Mongu. The case mortality from malaria also rose sharply for Europeans.

The malaria and blackwater admissions to Government European hospitals with deaths (in brackets) for the past five years are shown in the following table.

Station	1934		1935		1936		1937		1938	
	Malaria	Black-water	Malaria	Black-water	Malaria	Black-water	Malaria	Black-water	Malaria	Black-water
Livingstone ...	111	—	102 (1)	1 (1)	168	3 (2)	157	1	194 (4)	2 (1)
Lusaka ...	65 (1)	1	85	3 (1)	94 (1)	5	90	4 (4)	103	3 (1)
Broken Hill...	111	1	77	1 (1)	67	2	94 (1)	4 (2)	140	8
Ndola ...	108	4 (3)	178	3 (1)	140 (1)	4	174	2	163 (2)	8 (2)
Kasama ...	7 (1)	—	1	—	1	—	3	—	6	—
Mongu ...	1	—	1	—	1	—	3	—	1	—
Fort Jameson ...	10	—	13	—	15	—	15	1 (1)	38	2 (1)
Totals ...	413 (2)	6 (3)	457 (1)	8 (4)	486 (2)	14 (2)	536 (1)	12 (7)	647 (6)	23 (5)

The Medical Officer, Broken Hill, reports 11 cases of blackwater with no deaths. He is now able to claim 16 successive cases without any death, and attributes this excellent record to prompt treatment by atabrin given intramuscularly.

Cases of sleeping sickness for the year numbered 94 with 11 deaths. About a quarter of these cases occurred in the Abercorn district near the shore of Lake Tanganyika, the only part of the Protectorate where trypanosomiasis is carried by *Glossina palpalis*. These cases came almost entirely from the village of Mbete where the fly has a favourite haunt and breeding ground in the so-called "sacred forest", the traditional burial place of the tribal chiefs, and the fly is found all along the stream which winds through the village gardens and which is used for washing and for drawing water. Destruction of the forest would be easy and almost certainly effective, but would cause grave offence to native sentiment. It is probable that during 1939 the Mbete people will be moved to a safe area and entry to the "sacred forest" will be prohibited to all save the hereditary keeper of the graves.

During 1938, 18.5 per cent. of the Mbete population have been treated for the disease. In a careful study of 9 cases treated during the year at Ndola hospital, the Medical Officer there shows that practically certainly all were infected on the

Luswishi river, west of Ndola, a favourite place for fishing for the copper mines market. This area was recognised years ago by Kinghorn as a source of trypanosomiasis (*T. rhodesiense* and *G. morsitans*) and is often spoken of locally as "Kinghorn's area." Four local cases were seen at Kasama, two being relapses and two new cases from villages close to the area shown in 1937 to be infected. The present position concerning trypanosomiasis in the Luangwa Valley is uncertain; it is however, certainly not such as to give rise to concern. In the area near Mumbwa demarcated by Gilkes (Appendix to 1935 Report) 29 cases were treated.

There were 4 European and 107 native cases of relapsing fever. The first suggestion, so far as I am aware, that this disease in Northern Rhodesia is ever other than tick-borne, occurs in the 1938 report by the Medical Officer, Mazabuka. He saw 4 cases among native prisoners and 3 among witnesses brought to the court. Search failed to disclose ticks at the gaol but the prisoners' blankets were louse-infested. The quarters provided for witnesses were infested by ticks.

(4) Infectious Diseases.

So far as concerns the group ordinarily going by this name there is little of interest to report. There was a good deal of whooping-cough among both native and European children and measles was much less prevalent than in former years. There was a small epidemic of typhoid (16 cases, 2 deaths) among natives at Nchanga mine when sanitary conditions, during the construction stage, were not satisfactory. Reference has been made already to 34 cases of smallpox in Barotseland. A table showing notifications of notifiable disease follows:

(4) Infectious Diseases.

Notifications were as follows:

Corresponding Number in International List, 1929	Diseases	Cases		Deaths	
		Euro- peans	Natives	Euro- peans	Natives
1 (a)	Typhoid	7	40	—	4
2 (b)	Paratyphoid	6	—	—	—
3	Typhus	1	—	—	—
4	Relapsing fever	4	107	—	4
6	Small-pox	—	37	—	4
6	Alastrim	—	22	—	—
7	Measles	42	9	—	—
8	Scarlet fever	3	—	—	—
9	Whooping-cough	24	48	—	—
10	Diphtheria	3	—	—	—
11	Influenza :				
11 (a)	With respiratory complications	13	218	3	8
11 (b)	Without respiratory complications	44	207	—	—
13	Dysentery :				
13 (a)	Amoebic	19	102	—	—
13 (b)	Bacillary	19	25	—	4
13 (c)	Unclassified	6	93	1	6
15	Erysipelas	2	1	—	—
16	Acute Poliomyelitis	—	3	—	—
17	Encephalitis Lethargica	1	2	—	1
18	Cerebro-Spinal fever	3	50	1	23
20	Anthrax	—	2	—	—
21	Rabies	—	4	—	—
23	Tuberculosis of Respiratory System	6	197	—	25
24-32	Tuberculosis—Other Organs	1	27	—	6
33	Leprosy	—	172	—	2
44-46	Blackwater	33	3	7	2
39	Trypanosomiasis	—	94	—	11
39	Yaws	—	382	—	—
140-150	Puerperal fever	1	—	—	—

(5) Helminthic Diseases.

Chief interest continues to centre round bilharzia. Balovale reports both flukes, *S. mansoni* 73 cases, *S. haematobium* 22 cases. Mongu, where conditions would seem to be at least as likely to favour bilharzia disease as those at Balovale,

again reports no cases. Broken Hill reports that 20 per cent. of all native admissions to hospital showed bilharzia infection (338 out of 1692). The Medical Officer, Broken Hill (like several others) reports that he encounters few obviously direct symptoms of the infection which was, however, the direct cause of death in five cases. The Medical Officer, Abercorn, while reporting that helminthic infections are not common in his district, remarks the discovery of a focus of bilharzia infection on the Saisi River where 16 native school children of Kawimbe Mission were all infected. The Medical Officer, Kasama, sees very few cases and regards those seen as infected elsewhere. At Fort Jameson all cases seen (19) were *S. haematobium*.

Infestation by hookworm is certainly common. At Broken Hill in 1938, 24 per cent. of all natives admitted to hospital were infected. This rate, while considerable, is less than half what is commonly found in the hot, wet tropics. The degree of infestation is commonly light. The Medical Officer, Fort Rosebery, reports ancylostomiasis to be hyperendemic in the Bangweulu swamp villages and in the densely populated stretch of the Luapula River. Both these areas approach more nearly in concentration of population and physical conditions, than do any other areas in Northern Rhodesia, to the conditions typically associated with serious hookworm infestation. The Medical Officer was able to re-examine, after 6 months, 9 natives who had been treated and cured. Five had been re-infected.

The same Medical Officer, like his predecessor in the district, finds strongyloid infection common and productive of symptoms which yield to anthelmintic treatment.

Filaria perstans continues to be reported and the Medical Officer, Mazabuka, reports having found, in three individuals, sheathed micro-filariæ which he considers to be *Mf. bancrofti*. So far as I am aware this worm has never previously been reported from Northern Rhodesia and the finding requires confirmation, particularly in view of the frequency in certain areas of leg enlargement referred to locally as elephantiasis, Serenje leg, Feira leg, etc., and described on page 7 of my last report.

VITAL STATISTICS, 1938.

European Deaths.

<i>Ages</i>					<i>Number of Deaths</i>
Under 1 day ... ..	...	...	...	...	1
1 to 7 days ... ..	...	...	...	...	2
1 to 4 weeks ... ..	...	...	...	...	1
4 weeks to 3 months ... ..	...	...	...	...	1
3 to 6 months ... ..	...	...	...	...	1
6 to 9 months ... ..	...	...	...	...	2
9 to 12 months... ..	...	...	...	...	2
1 to 2 years ... ..	...	...	...	...	2
2 to 3 years ... ..	...	...	...	...	1
3 to 4 years ... ..	...	...	...	...	4
4 to 5 years ... ..	...	...	...	...	—
Total under 5 years ... ..	...	...	...	...	17
Deaths at all ages ... ..	...	...	...	...	129

European Infant Mortality

<i>Year</i>	<i>Deaths under 1 year</i>	<i>Births</i>	<i>Deaths under 1 year per 1,000 Births</i>
1938	10	355	28.17

The causes of death were as follows :

Premature Birth	1
Cerebral Convulsions and Inanition... ..	1
Measles	1
Gastro Enteritis	2
Broncho Pneumonia	1
Bacillary Dysentery	1
Sub-dural Haemorrhage	1
Malaria	1
Broncheal Obstruction and Heart Failure	1
<i>Total</i>	10

Deaths of Males and Females from Various Causes at all Ages.

Corresponding number in International List (1929 Revision)	Causes of Deaths	1938		Totals
		Males	Females	
1 (a)	Typhoid fever	—	1	1
7	Measles	2	—	2
11 (a)	Influenza with respiratory com- plications	2	—	2
11 (b)	Influenza without respiratory com- plications	—	1	1
13 (b)	Dysentery bacillary	—	2	2
18	Cerebro Spinal fever	1	—	1
23	Tuberculosis of Respiratory Sys- tem	2	1	3
24-32	Other tuberculous diseases ...	1	—	1
38	Malaria :			
	(a) Benign tertian	1	—	1
	(b) Subtertian	7	1	8
	(c) Unclassified	3	2	5
44-46	Blackwater fever	6	3	9
45-53 (a)	Cancer and other Tumours :			
	(a) Malignant	6	3	9
56-57	Rheumatic conditions	—	1	1
59	Diabetes	1	—	1
70-74	Diseases of the blood and blood forming organs	1	1	2
82	Cerebral haemorrhage	1	—	1
90-95	(a) Heart diseases	13	2	15
96-103	(b) Other circulatory diseases ...	—	3	3
107 (a)	Broncho-pneumonia	2	2	4
108 (b)	Lobar-pneumonia	3	—	3
109 (c)	Otherwise defined	3	3	6
119-120	Diarrhoea and enteritis :			
	(a) Under 2 years of age ...	2	—	2
	(b) Over 2 years of age ...	—	1	1
121	Appendicitis	1	—	1
122	Hernia	1	—	1
115-118	Other diseases of the digestive sys- tem	3	—	3
130 (a)	Nephritis (Acute)	1	—	1
131 (b)	Nephritis (Chronic)	1	—	1
133-139	Other non-venereal diseases of the genito-urinary system ...	2	—	2
145	(c) Toxaemias of Pregnancy ...	—	1	1
143-144	(d) Other conditions of the puerperal state	—	1	1
151-156	Diseases of the skin, cellular tissue, bones and organs of locomotion	1	1	2
158 (a)	Congenital debility (children under 1 year)	—	2	2
159 (b)	Premature birth (children under 1 year)	1	—	1
160 (c)	Injury at birth (children under 1 year)	—	1	1
163-171 (a)	Suicide	3	—	3
172-198 (b)	Other forms of violence	17	1	18
199-200	Ill-defined causes	5	2	7
	<i>Total</i>	93	36	129

(3) European and Native Officials.

	Eur. 1936	Nat. 1936	Eur. 1937	Nat. 1937	Eur. 1938	Nat. 1938
Total number of officials resident	611	2,550	616	2,786	687	3,048
Average number of officials resident	536	2,376	547	2,685	566	2,984
Total number on sick list	269	3,972	258	2,309	260	2,075
Total number of days on sick list	2,845	15,649	2,399	16,180	2,532	16,035
Average daily number on sick list	7.82	42.87	6.57	44.33	6.94	43.93
Percentage of sick to average number resident	1.45	1.80	1.20	1.65	1.23	1.47
Average number of days on sick list for each patient	10.57	3.93	9.29	7.01	9.74	7.73
Average sick time to each resident	4.65	6.58	4.38	6.01	4.47	5.37
Total number invalided	—	25	3	24	—	44
Percentage of invalidings to total residents ...	—	.98	.48	.88	—	1.44
Total deaths	—	13	4	10	1	13
Percentage of deaths to total residents ...	—	.50	.65	.36	.14	.43
Percentage of deaths to average number of residents	—	.54	.73	.38	.17	.44

SECTION III.

HYGIENE AND SANITATION.

(a) GENERAL REVIEW OF WORK DONE AND PROGRESS MADE.

(1) Preventive Measures.

The funds and staff available in 1938 did not permit of any notable increase of "work done" or "progress made" as regards major activities. For the first time, however, since financial difficulties were permitted to reduce preventive activity nearly to zero, it is possible to claim something more than maintenance of the *status quo*. The reports from all medical stations indicate full use of available resources and a very definite and welcome tendency on the part of Medical Officers to regard themselves as guardians of health as well as healers of disease.

The main anti-malaria work at Lusaka was further consolidated, but absence on leave of the inspector in charge, without replacement, prevented further extension of the works during the year under review.

The anti-malaria work at Livingstone whose initiation was referred to in my last report was commenced when the rains were over and, towards the end of the year, the Survey Department completed the survey required before major operations can be undertaken.

District reports refer to the need for skilled supervision of routine anti-malaria work at Broken Hill especially in the Mine Township. At Ndola quite considerable anti-malaria work, mostly of a minor character was carried on, financed jointly by Government and the Municipal Council. At the end of October there arrived Dr. Jackson, Malariologist, and Mr. Miller, anti-malaria engineer, to study and report upon the serious malaria problem which confronts Ndola. Their reports will be awaited with interest and some financial apprehension. Fort Jameson records an interesting finding concerning malaria. Search of wells, borrow-pits and known swampy areas failed to disclose the breeding places of the vectors of prevalent malaria. A search was then made of the immediate surroundings of all houses occupied by Europeans. On nearly every premises anopheles were found to be breeding. At Fort Jameson a native sanitary man has been trained to search for and treat breeding places and great improvement has resulted. Much planting of blue gums has been carried out. At Fort Rosebery draining, oiling and blue gum planting have been continued. At Balovale, with no trained staff and a minimum of labour (prisoners and lepers) a continuous effort at control of malaria has been made and the worst breeding areas of a very difficult place have been kept under control.

I have referred several times to the difficulties which arise from the, in my opinion, too early delegation of health responsibilities and duties to young and impecunious local management boards. Expected expansion of Government's Health Department will enable more help and encouragement to be given to small local authorities than in the past.

(2) General Measures of Sanitation.

The bucket system continues to prevail as the main method of sewage disposal at European quarters although there is a steady increase in the provision of septic

tanks with soakage pits. For Native quarters there is a welcome tendency to use deep pit latrines. The Medical Officer, Balovale, reports that all latrines at the location are now of pit type and over 20 feet deep. Where buckets are used in native locations they continue to be seldom other than grossly insanitary.

Piped water supplies are rare in Northern Rhodesia. That of Livingstone, drawn from the Zambezi, is beautifully soft, plentiful and satisfactory as to purity. The supply of new Lusaka is from a bore-hole, pumped to a gravity tank of inadequate capacity, and is plentiful, hard (22 deg.) and is chlorinated and potable. The supply of Broken Hill comes from the mine. It is almost unbelievably hard (66 deg.) and was described by an analyst as the most highly mineralised water he had ever heard of being used as a town supply. It contains a high proportion of zinc but there is no evidence in theory or practice that this is harmful. The supply of Ndola is unsatisfactory. The supply is insufficient in quantity, but chlorination is now carried out. I understand that improvements are under consideration. The growing townships of Luanshya, Kitwe and Mufulira are fortunate in being able to obtain a piped water supply from the systems installed by the large mining companies for their own employees residing in the adjoining mine townships. These waters come from rivers or from the mines and the supplies are ample and purified. It is interesting that the water from Mufulira mine was found to be so heavily charged with carbon dioxide that special treatment has been required to prevent its attacking the pipes. Other water supplies in Northern Rhodesia are mostly primitive, shallow wells, large rivers, small streams, water holes, etc. On larger European properties there are frequently to be found bore holes of varying depth, provided with wind mills. In many native areas there is definite water shortage.

(3) School Hygiene.

As was predicted in the 1937 Report, the examination of all European school children was carried out by one Medical Officer. His report, somewhat abbreviated, is printed as an appendix to this report.

(4) Labour Conditions.

Organised recruiting of labour for employment outside Northern Rhodesia again increased. The voluntary exodus, largely on foot, to the South *via* Victoria Falls, Kazungula ferry and across Portuguese East African territory and to the north by many routes, must reach a large total. A large number of natives of Angola entered Northern Rhodesia near Mongu and offered themselves there as labour recruits to agents recruiting for Southern Rhodesia.

The Medical Officer, Abercorn, records that the recruits examined by him were of good standard. The Medical Officer, Balovale, reports unfavourably on the condition of natives who were examined by him as to fitness for work. He found 23 per cent. to be anaemic, a further 21 per cent. to have some recognisable morbid condition and a further six per cent. to have venereal disease. The Medical Officer, Mongu, examined 2,156 candidates for recruitment for work in Southern Rhodesia, 280 for recruitment for work with Zambezi Saw Mills and 304 for other work in Northern Rhodesia. He also examined 1,882 natives seeking passes to go in search of work. He comments that those from Angola compare unfavourably in physique and condition with natives locally resident. The Medical Officer, Kasama, found it necessary to reject only about 5 per cent. of recruits presented to him.

The conditions under which labour is employed by the copper mining companies and the Rhodesia Broken Hill Development Company continue to be very satisfactory and to be improved. It is evident that those concerns realise the value of their labour and regard good treatment of it as sound financial policy. Most interesting experiments in rationing are in progress at Nkana, with a view to arriving at the most satisfactory scale of rations, method of issue of food and the like. Each experiment lasts 12 months and involves very large numbers of employees. The experiment with Rhokana No. 1 Ration is completed; that with Rhokana No. 2 will be completed in June, 1939. The Corporation is to be congratulated upon this valuable work which has involved considerable expenditure, and Mr. Scrivener, the Compound Manager, upon the enthusiasm, skill and patience with which the experiments are being conducted.

As I have reported before, the conditions under which some thousands of labourers live and work at the various properties of the Zambesi Saw Mills are less

satisfactory than in the mining industry, though these too have shown improvement. In particular I am not satisfied that provision for medical care at Mulobezi and in the forest camp are either adequate or such as the law requires.

I am no more satisfied now than at the time of writing earlier reports that conditions under which agricultural labour is employed are satisfactory in respect of wages, housing, sanitation, rations and medical care. As my staff increases under the five-year expansion scheme an endeavour will be made to bring about improvements. It would appear that the poor financial return from farming in Northern Rhodesia makes it difficult if not impossible for small farmers to provide conditions which are at all satisfactory.

(5) Housing.

The housing of industrial and agricultural labour has been referred to above under "Labour Conditions."

There is still much room for improvement of the housing in large and small town locations although there have been marked improvements during the year under review. I expressed the view in my last report that local authorities should be able to look to the central government for financial assistance in connection with native housing. This was accepted by Government both as to loans to meet capital costs of housing schemes, and also as to bearing a part of the recurrent loss when, as is frequent, wage levels do not permit charging an economic rent for any type of housing which can be considered satisfactory. As an aid to local authorities of towns seeking to take advantage of Government's proffered help, my department drew up and distributed type drawings of a location lay-out, of various kinds of houses, wash houses and latrines, with descriptive notes. A second set was also prepared for use in smaller, more rural places, where simpler arrangements might be permissible.

The Medical Officer, Broken Hill, calls attention to bad housing of Europeans at that centre. There has been a rapid increase in population leading to quite definite overcrowding. In Broken Hill and Livingstone there is increasingly serious overcrowding of Asiatics.

(6) Food in Relation to Health and Disease.

In the principal centres of European population there is reasonably adequate inspection and control of food for sale, except at Broken Hill where there is no qualified health inspector.

Milk supplies are nowhere to be regarded as safe without boiling or pasteurisation. It is sometimes thought and said that there is great risk to health in the use of raw milk produced from native-owned cows, with the implication that raw milk from European-owned cows is appreciably safer. The fact is that under present conditions neither is safe, without treatment, and I know of places where native-produced milk is definitely of a higher standard of nutritive value than is the European-produced milk. An attempt, such as is proposed every now and then, to have enforced, at the present time, regulations as to cow byres, milking, milk vessels etc., such as might be suitable for more advanced places, would put all native and many European producers out of business and cause a shortage of one of the most valuable articles of food. The proper course in this matter will be, for long to come, to boil or pasteurise *all* milk.

No serious shortage of food in native areas came to my notice in 1938.

Qualitative food deficiencies are probably wide-spread although frank deficiency diseases are not frequently encountered. At Abercorn the Medical Officer suggests that the frequency of leg ulcers and their intractability may be due to some dietary lack, despite the fact that the general standard of nutrition appears to be good. This view is shared by the medical man employed by Zambesi Saw Mills. The Medical Officer, Balovale, saw 131 cases of early scurvy in village natives and he describes the occurrence of a symptom-complex displaying itchy skin, scrotal rash and neuritis which has been described by Scott and Wright elsewhere, and is probably due

to a vitamin deficiency. The staple diet of the Balovale is cassava, they do not keep cattle, there are no dairies, slaughter houses, butchers' shops or markets in the district. It is interesting to know that labour from the Balovale district is welcomed at the Copper Mines.

(b) MEASURES TAKEN TO SPREAD THE KNOWLEDGE
OF HYGIENE AND SANITATION.

In all schools, native and European, lessons in hygiene are given and the same subject is taught in the special curriculum for those in training to be teachers.

In the Jeanes School special emphasis is given to hygiene in the courses undergone by prospective Jeanes Teachers and their wives. In the 1938 course of instruction for chiefs given at the Jeanes School, the lectures given by a Medical Officer were appreciated. Medical Officers on tour give advice and instruction in the villages. This has been specially well done in the Balovale district and some results are to be seen.

At the Agricultural Show held at Kateya the pupils of the Medical Training School gave a demonstration of first aid which caused great interest.

(c) TRAINING OF HEALTH DEPARTMENT PERSONNEL.

The work of the medical training school, started in October, 1936, has been continued. At the conclusion of the refresher course for existing staff, referred to on page 12 of my last report, there were admitted to the School proper 24 pupils who had done 6 months preliminary work in "feeder" hospitals. All except one of these had passed Standard VI in general education. After some months it appeared that three were unlikely to do well and these were transferred to work as mosquito boys under Dr. Jackson in his study of the malaria problem of Ndola. Two did very well and have been given permanent work of that kind; the third showed little regard for discipline and has been discharged.

A number of native girls have come forward seeking medical training and have been accommodated and given instruction at Lusaka native hospital, showing definite promise. No formal training school for girls is yet possible, though special quarters for girls in training have been provided in the plans for the new hospital at Lusaka.

Mbereshi Mission continues its training of girls in hygiene and nursing, but the aim continues to be to teach girls to carry their knowledge into village life when they marry, rather than to turn out trained welfare workers or nurses. The importance of that aim is of course fully acknowledged.

(d) RECOMMENDATIONS FOR FUTURE WORK.

The estimates for 1939 prepared during the year under review and approved by Government contain provision for a considerable further instalment of the expansion programme submitted to Government in 1936 and now made possible by the improved finances of the Protectorate and embodied in the general five year programme of expansion of the social services.

SECTION IV.

PORT HEALTH WORK AND ADMINISTRATION.

The only shipping port in the Protectorate is Mpulungu on Lake Tanganyika, visited monthly by a steamer of the Tanganyika Government. The Medical Officer, Abercorn, carried out the functions of port health officer and found nothing worthy of report during 1938.

As regards air services, the aerodromes of first landing are still Mpika for machines from Kenya and Tanganyika; Broken Hill for the services from the Congo to Madagascar; Lusaka for machines from Salisbury; and Livingstone (in wet weather Lusaka) for machines from Bulawayo. These air ports except Mpika, conform to the requirements of a "sanitary aerodrome" and Kasama, which conforms also, is expected to replace Mpika in 1939.

SECTION V.

MATERNITY AND CHILD WELFARE.

The Welfare Clinics at Livingstone, Lusaka, Ndola and Luanshya were maintained and at Broken Hill welfare work was initiated. At Livingstone, Lusaka, Ndola and Broken Hill both European and native clinics are conducted. At Luanshya only native work is carried on, while at Broken Hill in addition to a European clinic, three separate native clinics are conducted, one at the town compound and one each in the Railway and Mine Compounds. I desire to record my appreciation of the co-operation of the Management Board and of the mining and railway companies in this work at Broken Hill. As I have reported before, it is impossible to limit the work of native welfare clinics to activities associated with such clinics in England. Every sort of assistance is sought and is given so far as resources permit. Attendances of expectant mothers and of infants are increasing. I consider the work of these clinics to be among the most valuable done by my department. Figures for the work of the clinics are given below.

European Welfare Clinics.

			<i>Cases Treated</i>	<i>No. of Attendances</i>
Lusaka	...	...	331	752
Broken Hill (6 months only)			115	237
Ndola...	...	...	204	4,465
Livingstone	...	...	213	460

Native Welfare Clinics.

			<i>Cases Treated</i>	<i>No. of Attendances</i>
Lusaka	...	...	8,687	39,894
Broken Hill (6 months only)			3,501	7,751
Ndola...	...	...	13,774	38,750
Luanshya	...	...	3,377	25,199
Livingstone	...	...	—	41,168

The increase of welfare clinics in the Copperbelt referred to in my last report has not yet eventuated owing to delay in building the clinics themselves and houses for the nurses. It is hoped they will be completed in 1939.

SECTION VI.

HOSPITALS, DISPENSARIES AND VENEREAL CLINICS.

Hospitals.

Government maintained seven European and twelve native hospitals throughout the year. No additional hospitals were built but new hospitals to replace existing native hospitals were begun at Abercorn and Fort Jameson. Figures from these hospitals are given below :

European Hospitals

			<i>Year</i>	<i>Admissions</i>	<i>Deaths</i>	<i>Daily Average</i>
Livingstone	...	...	1937	528	14	12.76
			1938	594	12	11.38
Lusaka	...	...	1937	416	14	11.95
			1938	497	5	14.04
Broken Hill	...	...	1937	362	6	7.41
			1938	455	3	9.17
Ndola	...	...	1937	344	3	8.38
			1938	382	13	9.98
Fort Jameson	...	...	1937	58	4	1.64
			1938	81	3	1.46
Kasama	...	...	1937	12	1	.18
			1938	16	1	.37
Mongu	..	...	1937	11	—	.25
			1938	5	—	.17

Native Hospitals.

				Year	Admissions	Deaths
Livingstone	...	...	...	1937	1,761	118
				1938	1,566	124
Choma	...	...	...	1937	552	14
				1938	496	17
Mazabuka	...	...	...	1937	556	18
				1938	743	30
Lusaka	...	...	...	1937	842	42
				1938	1,083	51
Broken Hill	...	...	...	1937	1,699	74
				1938	1,692	74
Ndola	...	...	...	1937	1,394	60
				1938	1,697	67
Kasama	...	...	...	1937	369	11
				1938	378	15
Fort Rosebery	...	...	...	1937	881	13
				1938	678	9
Fort Jameson	...	...	...	1937	372	15
				1938	484	10
Abercorn	...	...	...	1937	322	5
				1938	276	16
Mongu	...	...	...	1937	850	21
				1938	834	9
Balovale	...	...	...	1937	1,748	29
				1938	1,580	26

Total Admissions, 1937, 11,346 : 1938, 11,507.

Out-Patients—Natives.

				Number Treated	Number of Attendances
Livingstone	...	...	...	1,459	3,463
Choma	...	...	...	1,366	8,124
Mazabuka	...	...	...	3,061	26,990
Lusaka	...	...	...	3,603	6,604
Broken Hill	...	...	...	2,951	6,256
Ndola	...	...	...	4,543	7,666
Kasama...	...	...	...	3,387	9,865
Fort Rosebery	...	...	...	5,762	13,284
Fort Jameson	...	...	...	1,438	4,789
Mongu	...	...	...	7,625	37,359
Balovale	...	...	...	4,391	13,789
Abercorn	...	...	...	4,834	33,309
Total	...			44,420	171,498

The Roan Antelope, Mufulira and Rhokana copper mining companies continue to maintain admirably staffed and equipped hospitals for European and native employees and dependents. On a fee basis these companies give the services of their medical organisations to Government servants and their dependents and also to such unemployed natives as cannot be transferred for treatment to the Government hospital at Ndola.

Dispensaries.

During 1938 the previously reported rural dispensaries staffed by Africans continued their work, but during the year the dispensary at Chief Chitimukulu's village was closed since the chief and his elders took little interest in and no care for it and little use was made of it. During 1938, building of five new dispensaries was begun and all will be complete early in 1939. (At the time of writing they are complete.) These are the first in the scheme partially financed by the Colonial Development Fund. One new sub-dispensary was opened (Jumbe) in an area where cotton growing experiments show promise. Figures concerning the work of dispensaries are given below.

Government Rural Dispensaries.

				<i>No. of</i> <i>In-Patients</i>	<i>No. of</i> <i>Out-Patients</i> <i>Treated</i>	<i>No. of</i> <i>Attendances</i>
Mpongwe (Aug-December)...				13	370	1,544
Kapalala				—	871	4,894
Kasempa				128	1,554	7,537
Mwinilunga (10 months) ...				266	1,277	6,302
Chambeshi				24	1,216	3,752
Chitimukulu... ..				—	864	2,157
Milima				—	2,300	7,221
Mpika				90	4,688	16,341
Luwingu				—	2,392	3,034
Kawambwa (6 months) ...				—	1,833	4,609
Kafulwe				—	3,113	15,704
Mwenda				—	3,084	4,957
Kapata				—	2,574	5,666
Kawaza				412	—	14,697
Mkanda				64	774	9,674
Maguya				162	1,368	14,661
Njobo				89	—	15,983
Lundazi				87	1,588	12,268
Petauke				56	337	4,391
Jumbe (November and Dec- ember)				20	—	1,636
Kitwe				—	1,417	—
Mumbwa				72	1,900	—
Mkushi				84	1,637	3,292
Namwala				—	—	—
Serenje				—	—	—
Chinsali				—	—	—
Luwingu				—	—	—
Mporokoso				—	—	—
Mpulungu				—	—	—
Wayitwika				—	—	—
Mwenimpanza				—	—	—
Isoka... ..				—	—	—
<i>Totals</i>				<u>1,567</u>	<u>35,157</u>	<u>160,320</u>

Mission Medical Work.

Figures for the work of hospitals and dispensaries conducted by Missions aided by Government grants are given below :

Missions Subsidised by Government.

<i>Mission</i>	<i>Number In- Patients</i>	<i>Number Out- Patients</i>	<i>Attendances of Out-Patients</i>
U.M.C.A. :			
Msoro	98	2,942	34,313
Fiwila	137	2,126	16,961
Mapanza	36	3,660	21,643
Chipili	321	11,272	55,068
Methodist Missionary Society :			
Kasenga	182	1,957	16,474
Kanchindu	314	5,364	18,175
Chipembi	47	1,226	6,221
Nambala	14	379	—
White Fathers :			
Minga	71	1,786	15,547
Chilubula	249	14,640	88,436
Broken Hill Prefecture :			
Chikuni	146	1,208	1,649
Broken Hill	—	467	906
Chingombe	52	1,155	8,043
Kasisi	91	1,000	2,674
Katondwe... ..	42	1,078	2,955
Sancta Maria :			
(Mongu)	67	2,332	10,977
(Bangweulo)	35	374	2,202
Livingstonia Mission :			
Chasefu	59	3,374	9,647
Chitambo	332	11,278	45,067
Lubwa	405	3,686	35,619
Mwenzu	557	—	29,023
London Missionary Society :			
Kawimbi	134	—	23,795
Mporokoso	14	2,079	8,416
Seventh Day Adventist :			
Rusangu	17	1,650	3,288
Musofu	8	2,554	2,162
Mwami	102	2,435	30,827
South African General Mission :			
Luampa	59	3,666	14,794
Mukinje Hill	242	3,423	—
D.R.C.M. :			
Madzimoyo	280	1,596	11,724
Brethren in Christ :			
Macha	1,318	10,134	15,627
Kalene Hill	604	2,066	9,749
Paris Mission :			
Sesheke	172	3,833	24,906
Namwianga :			
Kalomo	110	973	1,396
Kabanga	33	216	752
Fiwala Mission :			
Ndola	3	420	781
Rees Memorial :			
Pemba	37	1,032	3,096
Ibwe Munyama	40	650	3,128
Johnston Falls	420	609	27,657
<i>Totals</i>	<u>6,848</u>	<u>108,640</u>	<u>573,478</u>

The very large amount of work done by these agencies is greatly appreciated and with very few exceptions I am satisfied that very good service is given and that Government's grants, mostly very small, are well invested. The total sum given as grants-in-aid was £3,465.

At the Lusaka Native Welfare Clinic there is a special session once a week for venereal disease in women. Otherwise there are no special V.D. clinics, but all hospitals and dispensaries treat venereal disease day in and day out.

Certain blanks will be noticed in the foregoing tables. These are due either to imperfect keeping of records by native staff or, in the case of Missions, to non-receipt of returns despite reminders.

Summing up the figures, which understate the facts, the following totals are of interest.

Europeans :

In-Patients admitted	2,028
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Natives :

In-Patients admitted	19,922
Out-Patients treated	217,556
Out-Patients attendances	1,058,058

SECTION VII.

PRISONS AND ASYLUMS.

There are no asylums or mental hospitals in the Protectorate. All European mental cases requiring institutional treatment are sent to the Southern Rhodesia Mental Hospital near Bulawayo, at this Government's expense. Certain native cases, an increasing proportion of the whole, are sent there also. The rest are cared for either in the prisons or in the villages. During the year Government gave very active thought to more satisfactory arrangements and in December the Medical Superintendent of the Southern Rhodesia Mental Hospital visited Northern Rhodesia to advise.

The health of prisoners and the sanitary condition of the prisons has been satisfactory throughout the year. In the prisons there has been no epidemic and no deficiency or institutional disease. In Lusaka the prisoners, thanks to an excellent prison garden, probably have a more regular supply of fresh vegetables than any other European or native inhabitants.

SECTION VIII.

METEOROLOGY.

Temperatures are generally moderate during the winter months from April to August, but quite cold weather occurs in June and July when a proportion of days are sunless with, at higher altitudes, an unpleasant wind and much dust. In September to March temperatures are higher with maximum about 105° in low-lying areas and about 86° on the high plateau. In October and November before the rains break unpleasantly oppressive days occur. Nights are rarely hot or stuffy. Rain-fall varies sharply by locality. The average is about 50 inches in areas of heavier precipitation and about 25 in the drier areas. December, January and February are the wet months and April to September inclusive, practically rainless.

SECTION IX.

SCIENTIFIC.

In the estimates for 1939 passed by the Legislature during 1938 provision is made for a laboratory, a pathologist and a laboratory assistant, but during 1938 only routine examinations of urine, blood and stools and a few Kahn tests were done in Government institutions. Use was made of facilities in Bulawayo, Johannesburg and at the Roan Antelope Mine. The staff of the last was responsible for the recognition, in a blood sample submitted to them, of the infection of tick-bourne typhus for the first time in Northern Rhodesia.

At the Lusaka Native Hospital every possible use is made of available material for training pupils of the Training School in microscopy.

J. F. C. HASLAM, M.C., M.D., F.R.C.P.E., D.P.H.,
Director of Medical Services.

ADMINISTRATION.

TABLE I.

European :

Director of Medical Services	1
Deputy Director of Medical Services	1
Specialist Surgical Officer	1
Senior Medical Officer... ..	1
Medical Officers	18
Pharmacist and Storekeeper	1
Pharmacist-Clerks	2
Clerk Dispenser	1
Health Inspectors	3
Chief Clerk	1
Accountant	1
Clerks	2
Matrons... ..	2
Nursing Sisters... ..	36
Female Ward Attendants	7
Dispenser (part paid by Broken Hill Development Company)	1

African :

Native Clerks	13
Orderlies and Other Medical Staff	149
Other Servants... ..	197
Sanitary Overseers	8
Malaria Control Boys	63

TABLE IV.

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) FOR THE YEAR 1938.

ALL GOVERNMENT EUROPEAN HOSPITALS.

No.	Corresponding Number in International List (1929 Revision)	Diseases	Remain- ing in Hospital at end of 1937	Yearly Total		Total cases treated	Remain- ing in Hospital at end of 1938
				Admis- sions	Deaths		
1	1	(a) Typhoid fever... ..	1	3	—	4	—
	2	(b) Paratyphoid fever	—	6	—	6	2
2	3	Typhus fever	—	1	—	1	—
3	4	Relapsing fever	—	3	—	3	—
4	5	Undulant fever	—	—	—	—	—
5	6	Smallpox	—	—	—	—	—
6	7	Measles	—	6	1	6	—
7	8	Scarlet fever	1	—	—	1	—
8	9	Whooping cough	—	1	—	1	—
9	10	Diphtheria	—	3	—	3	—
10	11	Influenza—					
	11A	(a) with respiratory complica- tions	—	13	3	13	—
	11B	(b) without respiratory compli- cations	—	44	—	44	—
11	12	Cholera	—	—	—	—	—
12	13	Dysentery—					
	13A	(a) Amoebic	—	11	—	11	1
	13B	(b) Bacillary	—	2	—	2	1
		(c) Unclassified	—	6	1	6	—
13	14	Plague—					
	14A	(a) Bubonic	—	—	—	—	—
	14B	(b) Pneumonic	—	—	—	—	—
	14C	(c) Septicaemic	—	—	—	—	—
	15	Erysipelas	—	1	—	1	—
14	16	Acute poliomyelitis	—	—	—	—	—
15	17	Encephalitis lethargica	—	1	—	1	—
16	18	Cerebrospinal fever	—	3	1	3	—
	19	Glanders	—	—	—	—	—
	20	Anthrax	—	—	—	—	—
17	21	Rabies	—	—	—	—	—
18	22	Tetanus	—	—	—	—	—
19	23	Tuberculosis of the respiratory system	1	3	—	4	—
20	24-32	Other tuberculous diseases ...	—	1	—	1	—
21	33	Leprosy	—	—	—	—	—
22	34-35	Venereal diseases—					
	34A, 34B	(a) Syphilis	—	2	—	2	—
	35	(b) Gonorrhoea	—	1	—	1	1
	35	(c) Other V.D.	—	—	—	—	—
23	37	Yellow fever	—	—	—	—	—
24	38	Malaria—					
		(a) Benign tertian	—	—	—	—	—
		(b) Subtertian	1	280	—	281	6
		(c) Quartan	—	—	—	—	—
		(d) Unclassified	5	361	6	366	6
25	44-46	Blackwater fever	1	22	5	23	1
26	39	Kala-azar	—	—	—	—	—
27	39	Trypanosomiasis	—	—	—	—	—
28	39	Yaws	—	—	—	—	—
29	39	Other protozoal diseases... ..	—	—	—	—	—
30	40	Ankylostomiasis	—	4	—	4	—
		<i>Carried forward</i> ...	10	778	17	788	18

TABLE IV.—*continued.*

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) FOR THE YEAR 1938.

ALL GOVERNMENT EUROPEAN HOSPITALS.

No.	Corresponding Number in International List (1929 Revision)	Diseases	Remain- ing in Hospital at end of 1937	Yearly Total		Total cases treated	Remain- ing in Hospital at end of 1938
				Admis- sions	Deaths		
		<i>Brought forward</i> ...	10	778	17	788	18
31	42	Schistosomiasis	—	3	—	3	—
32	41, 42	Other helminthic diseases ...	—	6	—	6	—
33	36, 43, 44	Other infectious and/or parasitic diseases	—	—	—	—	—
34	45-55	Cancer and other tumours ...	—	—	—	—	—
	45-53	(a) Malignant	1	14	3	15	1
	54	(b) Non-malignant	1	3	—	4	—
	55	(c) Undetermined	—	—	—	—	—
35	56-57	Rheumatic conditions	1	18	1	19	—
36	59	Diabetes	—	5	1	5	—
37	60	Scurvy	—	—	—	—	—
38	61	Beriberi	—	—	—	—	—
39	62	Pellagra	—	—	—	—	—
40	58, 63, 64	Other diseases	—	—	—	—	—
		(a) Nutritional	—	2	—	2	1
	65-69	(b) Endocrine glands and general	—	2	—	2	—
41	70-74	Diseases of the blood and blood- forming organs	—	9	—	9	—
42	75-77	Acute and chronic poisoning ...	—	4	—	4	—
43	82	Cerebral haemorrhage	—	3	1	3	—
44	78-81, 83-87	Other diseases of the nervous sys- tem	—	25	—	25	—
45	88	Trachoma	—	1	—	1	—
46	88	Other diseases of the eye and annexa	—	31	—	31	1
47	89	Diseases of the ear and mastoid sinus	1	1	—	2	—
48	90-103	Diseases of the circulatory system	—	—	—	—	—
	90-95	(a) Heart Diseases	2	21	2	23	1
	96-103	(b) Other circulatory diseases ...	1	7	—	8	—
49	106	Bronchitis	1	25	1	26	—
50	107-109	Pneumonia—	—	—	—	—	—
	107	(a) Broncho-pneumonia	—	6	1	6	1
	108	(b) Lobar-pneumonia	—	1	—	1	—
	109	(c) Otherwise defined	—	3	1	3	—
51	104, 105, 110-114	Other diseases of the respiratory system	—	66	2	66	3
52	119-120	Diarrhoea and enteritis—	—	—	—	—	—
		(a) Under 2 years of age	—	8	—	8	—
		(b) Over 2 years of age	—	24	1	24	—
53	121	Appendicitis	1	73	—	74	1
54	122	Hernia, intestinal obstruction ...	—	14	—	14	2
55	124	Cirrhosis of the liver	—	3	—	3	—
56	125-127	Other diseases of the liver and biliary passages... ..	—	12	—	12	1
57	115-118, 123, 128, 129	Other diseases of the digestive system	—	196	1	196	7
58	130-132	Nephritis (all forms)	—	—	—	—	—
	130	(a) Acute	—	6	—	6	—
	131	(b) Chronic	—	4	—	4	—
		<i>Carried forward</i> ...	19	1,374	32	1,393	37

TABLE IV.—*continued.*

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) FOR THE YEAR 1938.

ALL GOVERNMENT EUROPEAN HOSPITALS.

No.	Corresponding Number in International List (1929 Revision)	Diseases	Remain- ing in Hospital at end of 1937	Yearly Total		Total cases treated	Remain- ing in Hospital at end of 1938
				Admis- sions	Deaths		
		<i>Brought forward</i> ...	19	1,374	32	1,393	37
59	133-139	Other non-venereal diseases of the genito-urinary system ...	1	86	1	87	3
60	140-150	Diseases of pregnancy, childbirth, and the puerperal state ...	1	5	1	6	—
	140, 141	(a) Abortion ...	—	36	—	36	2
	142	(b) Ectopic gestation ...	—	3	—	3	—
	145-147	(c) Toxaemias of Pregnancy ...	—	5	1	5	—
	143, 144, 148-150	(d) Other conditions of the puer- peral state ...	2	160	1	162	7
61	151-156	Diseases of the skin, cellular tissue, bones and organs of locomotion	1	192	1	193	4
62	157-161	Congenital malformations and diseases of early infancy ...	—	4	—	4	—
	158	(a) Congenital debility (chil- dren under 1 year) ...	—	—	—	—	—
	159	(b) Premature birth (children under 1 year) ...	—	—	—	—	—
	160	(c) Injury at birth (children under 1 year) ...	—	—	—	—	—
63	162	Senility ...	1	4	—	5	3
64	163-198	External causes—					
	163-171	(a) Suicide ...	—	—	—	—	—
	172-198	(b) Other forms of violence ...	2	81	—	83	7
	199-200	Ill-defined causes ...	—	78	—	78	1
		<i>Total deaths all causes</i> ...	27	2,028	37	2,055	64

TABLE IVa.

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) FOR THE YEAR 1938.

ALL GOVERNMENT NATIVE HOSPITALS.

No.	Corresponding Number in International List (1929 Revision)	Diseases	Remain- ing in Hospital at end of 1937	Yearly Total		Total cases treated	Remain- ing in Hospital at end of 1938
				Admis- sions	Deaths		
1	1	(a) Typhoid fever... ..	—	2	1	2	—
	2	(b) Paratyphoid fever	—	—	—	—	—
2	3	Typhus fever	—	—	—	—	—
3	4	Relapsing fever	3	70	4	73	—
4	5	Undulant fever	—	—	—	—	—
5	6	Smallpox	1	10	—	11	—
6	7	Measles	2	8	—	10	—
7	8	Scarlet fever	—	—	—	—	—
8	9	Whooping cough	1	1	—	2	—
9	10	Diphtheria	—	—	—	—	—
10	11	Influenza—					
	11A	(a) with respiratory complica- tions	2	216	8	218	6
	11B	(b) without respiratory compli- cations	4	101	—	105	1
11	12	Cholera	—	—	—	—	—
12	13	Dysentery—					
	13A	(a) Amoebic	1	66	1	67	2
	13B	(b) Bacillary	—	19	3	19	—
		(c) Unclassified	—	9	1	9	—
13	14	Plague—					
	14A	(a) Bubonic	—	—	—	—	—
	14B	(b) Pneumonic	—	—	—	—	—
	14C	(c) Septicaemic	—	—	—	—	—
	15	Erysipelas	—	1	—	1	—
14	16	Acute poliomyelitis	—	3	—	3	—
15	17	Encephalitis lethargica	—	2	1	2	—
16	18	Cerebrospinal fever	—	25	18	25	—
	19	Glanders	—	—	—	—	—
	20	Anthrax	—	1	—	1	—
17	21	Rabies	—	4	—	4	—
18	22	Tetanus	—	1	1	1	—
19	23	Tuberculosis of the respiratory system	3	51	24	54	6
20	24-32	Other tuberculous diseases	2	25	6	27	1
21	33	Leprosy	83	89	2	172	85
22	34-35	Venereal diseases—					
	34A, 34B	(a) Syphilis	227	2,301	27	2,528	177
	35	(b) Gonorrhoea	11	419	1	430	15
	35	(c) Other V.D.	—	6	—	6	—
23	37	Yellow fever	—	—	—	—	—
24	38	Malaria—					
		(a) Benign tertian	—	5	—	5	—
		(b) Subtertian	14	586	20	600	18
		(c) Quartan	—	1	—	1	—
		(d) Unclassified	10	342	1	352	14
25	44-46	Blackwater fever	—	3	2	3	—
26	39	Kala-azar	—	—	—	—	—
27	39	Trypanosomiasis	4	89	10	93	9
28	39	Yaws	21	361	—	382	43
29	39	Other protozoal diseases... ..	—	—	—	—	—
30	40	Ankylostomiasis	22	539	1	561	14
		<i>Carried forward</i>	411	5,356	132	5,767	391

TABLE IVa.—*continued.*

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) FOR THE YEAR 1938.
ALL GOVERNMENT NATIVE HOSPITALS.

No.	Corresponding Number in International List (1929 Revision)	Diseases	Remain- ing in Hospital at end of 1937	Yearly Total		Total cases treated	Remain- ing in Hospital at end of 1938
				Admis- sions	Deaths		
		<i>Brought forward</i> ...	411	5,356	132	5,767	391
31	42	Schistosomiasis	20	281	9	301	19
32	41, 42	Other helminthic diseases ...	—	55	—	55	2
33	36, 43, 44	Other infectious and/or parasitic diseases	12	263	2	275	6
34	45-55	Cancer and other tumours ...	—	—	—	—	—
	45-53	(a) Malignant	1	19	5	20	1
	54	(b) Non-malignant	6	46	—	52	2
	55	(c) Undetermined	—	3	—	3	—
35	56-57	Rheumatic conditions	2	196	1	198	7
36	59	Diabetes	—	1	—	1	—
37	60	Scurvy	2	67	7	69	2
38	61	Beriberi	—	2	1	2	—
39	62	Pellagra	—	13	—	13	—
40	58, 63, 64	Other diseases	—	—	—	—	—
		(a) Nutritional	—	32	—	32	4
	65-69	(b) Endocrine glands and general	—	14	—	14	2
41	70-74	Diseases of the blood and blood- forming organs	5	20	10	25	1
42	75-77	Acute and chronic poisoning ...	—	20	—	20	—
43	82	Cerebral haemorrhage	—	3	3	3	—
44	78-81, 83-87	Other diseases of the nervous sys- tem	5	88	6	93	13
45	88	Trachoma	—	12	—	12	—
46	88	Other diseases of the eye and annexa	26	429	1	455	21
47	89	Diseases of the ear and mastoid sinus	1	40	—	41	4
48	90-103	Diseases of the circulatory system	—	—	—	—	—
	90-95	(a) Heart Diseases	1	49	10	50	1
	96-103	(b) Other circulatory diseases ...	2	30	4	32	2
49	106	Bronchitis	8	136	5	144	—
50	107-109	Pneumonia—					
	107	(a) Broncho-pneumonia	1	114	23	115	5
	108	(b) Lobar-pneumonia	6	230	79	236	13
	109	(c) Otherwise defined	3	21	8	24	1
51	104, 105, 110-114	Other diseases of the respiratory system	3	104	4	107	9
52	119-120	Diarrhoea and enteritis—					
		(a) Under 2 years of age	1	40	11	41	2
		(b) Over 2 years of age	3	93	11	96	6
53	121	Appendicitis	1	1	1	2	—
54	122	Hernia, intestinal obstruction ...	1	57	4	58	10
55	124	Cirrhosis of the liver	—	25	6	25	1
56	125-127	Other diseases of the liver and biliary passages... ..	—	11	4	11	—
57	115-118, 123, 128, 129	Other diseases of the digestive system	6	124	9	130	3
58	130-132	Nephritis (all forms)	—	—	—	—	—
	130	(a) Acute	—	6	2	6	—
	131	(b) Chronic	—	16	4	16	—
		<i>Carried forward</i> ...	527	8,017	362	8,544	528

TABLE IVa.—*continued.*

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) FOR THE YEAR 1938.

ALL GOVERNMENT NATIVE HOSPITALS.

No.	Corresponding Number in International List (1929 Revision)	Diseases	Remain- ing in Hospital at end of 1937	Yearly Total		Total cases treated	Remain- ing in Hospital at end of 1938
				Admis- sions	Deaths		
		<i>Brought forward</i> ...	527	8,017	362	8,544	528
59	133-139	Other non-venereal diseases of the genito-urinary system ...	4	115	6	119	2
60	140-150	Diseases of pregnancy, childbirth, and the puerperal state					
	140, 141	(a) Abortion ...	—	15	1	15	—
	142	(b) Ectopic gestation ...	—	3	1	3	—
	145-147	(c) Toxaemias of Pregnancy ...	—	1	—	1	—
	143, 144, 148-150	(d) Other conditions of the puer- peral state ...	1	139	8	140	2
61	151-156	Diseases of the skin, cellular tissue, bones and organs of locomotion	116	1,444	19	1,560	111
62	157-161	Congenital malformations and diseases of early infancy ...	—	3	—	3	—
	158	(a) Congenital debility (chil- dren under 1 year) ...	1	57	9	58	—
	159	(b) Premature birth (children under 1 year) ...	—	2	2	2	—
	160	(c) Injury at birth (children under 1 year) ...	—	—	—	—	—
63	162	Senility ...	—	5	1	5	—
64	163-198	External causes—					
	163-171	(a) Suicide* ...	—	2	1	2	—
	172-198	(b) Other forms of violence ...	103	1,387	34	1,490	80
	199-200	Ill-defined causes ...	12	317	4	329	24
		<i>Total deaths all causes</i> ...	764	11,507	448	12,271	747

*1 attempted.

APPENDIX I.

A REPORT ON THE HEALTH OF THE EUROPEAN SCHOOL
CHILDREN OF NORTHERN RHODESIA.

SIR,

I have the honour to present to you a report on the health of the European Children of this Territory.

Acting on your instructions I examined the European children of all Government and Government aided schools in the Territory with the exception of the two schools situated at Fort Jameson and at Sakeji in the Mwinilunga District, both of which are small and too far distant.

The total number of school children, as given to me, was 1,223 of whom 1,108 were examined, the remainder not being examined owing to absenteeism or by request of parents ; 3 are not included in the report owing to their medical forms going astray, hence this report has been based on the compilation of 1,105 examinations.

This is the first time that the examination of all available European School Children between the ages of 6 and 16 years has been carried out by one Medical Officer of Health ; the importance of this is self evident, especially where the assessment of the nutrition of the children is concerned.

The examinations were carried out thoroughly with the hope of arriving at a reasonably precise estimation of the nutrition of the children under survey. I have been careful throughout to favour the 8-year-old children in my assessment, and have striven to subordinate the personal factor as far as possible.

All children, with one exception, had thick blood slides taken and examined for malaria or other parasites, also a haemoglobin estimate using Tallqvist's scale. These aids to assessment are important and have an important bearing on the ultimate finding.

The classification of nutrition adopted was as follows :

- (A) Excellent : meaning nutrition exceedingly good.
- (B) Good : meaning nutrition normal.
- (C) Fair : meaning nutrition sub-normal.
- (D) Poor : meaning nutrition bad.

Nutrition.

Owing to lack of time I am unable to submit a table of the assessment of nutrition of children in sex and age groups ; this is to be regretted.

On the completion of my inspections I returned to Livingstone and commenced collating all evidence available from the reports and tabulated this in the usual way, the result revealed the fact that approximately 41 per cent. of the school children were sub-normal in nutrition and of that number 27 per cent. were suffering from bad nutrition ; these figures are out of all proportion to any obtainable in England and Wales for a similar number of examinations.

The following Table A gives the findings :

Table A.

<i>Number of Children Examined</i>	<i>Excellent</i>		<i>Good</i>		<i>Fair</i>		<i>Poor</i>	
	<i>(A)</i>		<i>(B)</i>		<i>(C)</i>		<i>(D)</i>	
	<i>Number</i>	<i>Per cent.</i>	<i>Number</i>	<i>Per cent.</i>	<i>Number</i>	<i>Per cent.</i>	<i>Number</i>	<i>Per cent.</i>
1,105	324	29.23	328	29.68	154	13.93	299	27.05

As employed in this report nutrition means the nourishment of the child or, better still, the general wellbeing of the child.

As it is obvious that malaria plays a big part in the general health of this country I consider it opportune to place Table B here, so that it may be compared with Table A, especially with regard to the spleen index and haemoglobin estimate.

Table B.

Showing the incidence of the principal defects requiring treatment :

<i>Number of Examinations : 1,105</i>				
	<i>No. of defects</i>	<i>Incidence per 100 children</i>		
Dental	359	32.48		
Tonsils and Adenoids ...	362	32.76		
Defects of Vision ...	57	5.15		
Postural Deformities ...	78	7.05		
Organic Heart Disease	15	1.35		
Enlarged Spleens ...	327	29.59 = Spleen Index		
Haemoglobin Estimate	9	0.81 showed	60%	Degrees of Anaemia.
	430	38.91 showed	70%	
	431	39.00 showed	80%	
	207	18.73 showed	90%	
	29	2.62 showed	100%	

A comparative study of the Tables A and B shows that settled areas of this country contain a high incidence of sub-nutrition, a high spleen index and great deal of anaemia.

The nutrition of the children in the Lusaka area is definitely worse than in any other area. In Broken Hill Government School several children were met with who obviously would benefit by the issue of free milk and free meals. Mufulira on the other hand has not got the poor population met with at Lusaka and abolition of malaria from there will solve the nutrition problem. Choma with its Beit boarding school for girls is a revelation as it definitely can be classified as healthy. That nutrition of the European children of Northern Rhodesia should be so bad can be explained in several ways, namely : (1) Malaria ; (2) Lack of Balanced Diet ; (3) Insufficient protective food stuffs ; (4) Lack of Minerals ; especially in garden produce. Whatever may be the causes, malaria is the outstanding enemy and until this is controlled the question of nutrition will remain a vexed one.

I would like to draw attention to a fact revealed by this survey : On the Copperbelt where anti-malaria work has had primary place in public health programmes we find the nutrition, on the whole, better than elsewhere, but we also find the degree of anaemia increased, it is well known that the medical authorities in the mining areas are opposed to the taking of prophylactic quinine and deal energetically with all cases of malarial fever as they arise, whereas in the rest of the settled areas the anti-malaria campaigns have been negligible and resort made to prophylactic quinine to try and keep healthy. Here we find the nutrition, on the whole, worse than on the Copperbelt but a smaller degree of anaemia.

Physical Education.

It is an axiom that physical education is inseparable from the whole education of the child ; on my inspection I found that physical education was subordinated to academic education, which fact is not likely to raise the standard of education in this country, nor is it likely to assist the pupil who leaves school to make his or her way in the world hampered with a poor physique, indifferent health and an inadequate education.

Three schools out of fifteen visited showed a keenness with regard to the physical education of their children, namely Choma, Mazabuka, and Kitwe, the last mentioned school was outstanding in this respect and the physical condition of the children, boys and girls, reflects great credit on the headmaster concerned. Organised games were very nearly perfect.

The question of physical training or to be accurate, the lack of it, is very important. Physical training in the Northern Rhodesia schools is classed as an additional subject and is treated accordingly, in other words it would appear to be unwanted. The teachers have received instruction at their training colleges, but I venture to suggest that what they were taught has long been forgotten. The necessity for gymnasia and a trained physical instructor to organise and put on a firm basis physical training in the schools throughout this country, requires emphasis.

I would invite attention to the use of roller towels in schools. This practice should cease and single towels be supplied. Recently there was an outbreak of vulvo-vaginitis in two girls schools in the Union of South Africa and communal towels were held to be the source of spread.

I have the honour to be,

Sir,

Your obedient servant,

G. M. C. POWELL,
Medical Officer of Health.

TABLES "D" AND "C."

Name of School	No. Examined	Enlarged Spleens	Spleen Index	Excellent	Good	Fair	Poor	60%	70%	80%	90%	100%
Mufulira ...	112	40	35.71	35	38	15	22	4	57	46	4	1
Kitwe ...	204	42	20.58	78	60	22	44	0	74	82	8	0
Luanshya ...	198	47	23.73	63	61	25	49	0	57	123	18	0
Ndola : Government	51	13	25.29	25	17	4	5	1	1	18	30	1
Ndola : Convent ...	33	8	24.24	12	14	1	6	2	12	12	7	0
Broken Hill : Government	{79}	35	44.30	8	30	14	27	0	11	43	21	4
Broken Hill : Convent	{83}	32	38.55	21	25	14	23	0	5	59	16	3
Lusaka : Government	{136}	57	41.91	33	33	19	51	0	5	62	32	17
Silver Rest : Farm	{10}	4	40.00	0	3	1	6	1	2	4	3	0
Chomba : Farm ...	19	11	57.89	0	3	9	7	0	3	10	6	0
Mazabuka...	37	8	21.62	8	13	6	10	0	3	30	4	0
Choma ...	51	4	7.84	15	12	8	16	0	0	38	11	2
Livingstone : Government	{48}	14	29.16	14	9	8	17	1	4	31	12	0
Livingstone : Convent	{32}	7	21.87	11	4	4	13	0	1	19	12	0
Mulobezi ...	12	5	41.66	2	6	1	3	0	1	7	3	1

APPENDIX II.

RHODESIA BROKEN HILL DEVELOPMENT COMPANY, LIMITED,
BROKEN HILL.*Natives :*

Daily Average employed	...	...	...	2,478
Total Admissions to Hospital	...	...	...	1,057
Total Deaths (including accidents)	...	...	...	25
Mortality per mille employed	...	...	...	10.09

Accidents :

Total Major	...	...	...	...	8
Total Minor	...	...	...	...	331
Total Deaths	...	...	...	...	2

RHOKANA CORPORATION: NKANA MINE.

Natives :—Mine and contractors employees :

Daily Average employed	...	...	...	8,674
Total Admissions to Hospital	...	...	...	4,632
Total Deaths (including accidents)	...	...	...	81
Mortality per mille employed	...	...	...	9.34

Accidents :

Total Major	...	...	...	...	86
Total Minor	...	...	...	...	1,717
Total Deaths	...	...	...	...	14

ROAN ANTELOPE COPPER MINE: LUANSHYA.

Natives :—Mine and contractors employees :

Daily Average employed	...	...	...	7,644
Total Admissions to Hospital	...	...	...	2,925
Total Deaths (including accidents)	...	...	...	46
Mortality per mille employed	...	...	...	6.01

Accidents :

Total Major	...	...	...	...	125
Total Minor	...	...	...	...	1,166
Total Deaths	...	...	...	...	11

MUFULIRA COPPER MINES, LIMITED, MUFULIRA.

Natives :—Mine and contractors employees :

Daily Average employed	...	...	...	5,805
Total Admissions to Hospital	...	...	...	2,418
Total Deaths (including accidents)	...	...	...	79
Mortality per mille employed	...	...	...	13.61

Accidents :

Total Major	...	...	...	...	47
Total Minor	...	...	...	...	929
Total Deaths	...	...	...	...	13

